UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
WACO DIVISION

SABLE NETWORKS, INC. AND SABLE IP, LLC, ***Plaintiffs,*** v. **NOKIA CORPORATION; NOKIA OF AMERICA CORPORATION; AND NOKIA SOLUTIONS AND NETWORKS OY,** ***Defendants.***	**Civil Action No._____** **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Sable Networks, Inc. and Sable IP, LLC (collectively, "Sable" or "Plaintiffs") bring this action and make the following allegations of patent infringement relating to U.S. Patent Nos.: 6,954,431 (the "'431 patent"); 6,977,932 (the "'932 patent"); 7,012,919 (the "'919 patent"); 8,243,593 (the "'593 patent"); and 8,817,790 (the "'790 patent") (collectively, the "patents-in-suit"). Defendants Nokia Corporation; Nokia of America Corporation; and Nokia Solutions and Networks Oy (collectively, "Nokia" or "Defendant") infringes the patents-in-suit in violation of the patent laws of the United States of America, 35 U.S.C. § 1 *et seq*.

INTRODUCTION

1. The patents-in-suit arise from technologies developed by Dr. Lawrence G. Roberts - one of the founding fathers of the internet.[1] The patents relate to technologies for efficiently managing the flow of data packets over routers and switch devices. Dr. Roberts and engineers at

[1] Chris Woodford, THE INTERNET: A HISTORICAL ENCYCLOPEDIA VOLUME 2 at 204 (2005) ("Widely regarded as one of the founding fathers of the Internet, Lawrence Roberts was the primary architect of ARPANET, the predecessor of the Internet.").

Caspian Networks, Inc. and later Sable Networks, Inc. developed these technologies to address the increasing amount of data sent over computer networks.

2. Dr. Roberts is best known for his work as the Chief Scientist of the Advanced Research Projects Agency (ARPA) where he designed and oversaw the implementation of ARPANET, the precursor to the internet. Dr. Roberts' work on ARPANET played a key role in the development of digital network transmission technologies.[2] Initially, ARPANET was used primarily to send electronic mail and Dr. Roberts developed the first program for reading and sending electronic messages.

Keenan Mayo and Peter Newcomb, *How The Web Was Won*, VANITY FAIR at 96-97 (January 7, 2009); *One of the Engineers Who Invented the Internet Wants to Build A Radical new Router,* IEEE SPECTRUM MAGAZINE (July 2009); Katie Hafner, *Billions Served Daily, and Counting*, N.Y. TIMES at G1 (December 6, 2001)("Lawrence Roberts, who was then a manager at the Advanced Research Projects Agency's Information Processing Techniques Office, solved that problem after his boss began complaining about the volume of e-mail piling up in his in box. In 1972, Dr. Roberts produced the first e-mail manager, called RD, which included a filing system, as well as a Delete function.").

3. Dr. Roberts' work on ARPANET played a key role in the development of packet switching networks. Packet switching is a digital network transmission process in which data is broken into parts which are sent independently and reassembled at a destination. Electronic

[2] Katie Hafner, *Lawrence Roberts, Who Helped Design Internet's Precursor,* N.Y. TIMES at A2 (December 31, 2018) ("Dr. Roberts was considered the decisive force behind packet switching, the technology that breaks data into discrete bundles that are then sent along various paths around a network and reassembled at their destination.").

messages sent over the ARPANET were broken up into packets then routed over a network to a destination. "In designing the ARPANET, Roberts expanded on the work he'd done at MIT, using those tiny data packets to send information from place to place."[3] Packet switching has become the primary technology for data communications over computer networks.

From Two Small Nodes, a Mighty Web Has Grown

By 1966, with these and other basic ideas in place, Lawrence Roberts, recruited by ARPA from the Massachusetts Institute of Technology, mapped out the plan. Two years after the first transmission, the number of host computers grew to 23. The @ symbol was invented in 1972, and a year later 75 percent of the Arpanet traffic was E-mail. It was starting to look like the Net.").

George Johnson, *From Two Small Nodes, a Mighty Web Has Grown*, N.Y. TIMES at F1 (October 12, 1999).

4. After leaving ARPANET, Dr. Roberts grew increasingly concerned that existing technologies for routing data packets were incapable of addressing the increasing amounts of data traversing the internet.[4] Dr. Roberts identified that as the "Net grows, the more loss and transmission of data occurs. Eventually, gridlock will set in."[5]

> ***The Internet is broken. I should know: I designed it***. In 1967, I wrote the first plan for the ancestor of today's Internet, the Advanced Research Projects Agency Network, or ARPANET, and then led the team that designed and built it. The main idea was to share the available network infrastructure by sending data as small, independent packets, which, though they might arrive at different times, would still generally make it to their destinations. The small computers that directed the data

[3] Code Metz, *Larry Roberts Calls Himself the Founder of The Internet. Who Are You To Argue*, WIRED MAGAZINE (September 24, 2012); John C. McDonald, FUNDAMENTALS OF DIGITAL SWITCHING at 211 (1990) ("The ARPANET was, in part, an experimental verification of the packet switching concept. Robert's objective was a new capability for resource sharing.").

[4] eWeek Editors, *Feeling A Little Congested,* EWEEK MAGAZINE (September 24, 2001) ("Lawrence Roberts, one of the primary developers of Internet precursor ARPANet and CTO of Caspian Networks, recently released research indicating that Net traffic has quadrupled during the past year alone.").

[5] Michael Cooney, *Can ATM Save The Internet*, NETWORK WORLD at 16 (May 20, 1996); Lawrence Roberts, A RADICAL NEW ROUTER, IEEE Spectrum Vol. 46 34-39 (August 2009).

> traffic-I called them Interface Message Processors, or IMPs-evolved into today's routers, and for a long time they've kept up with the Net's phenomenal growth. Until now.

Lawrence Roberts, *A Radical New Router*, IEEE SPECTRUM Vol. 46(7) at 34 (August 2009) (emphasis added).

5. In 1998, Dr. Roberts founded Caspian Networks.[6] At Caspian Networks, Dr. Roberts developed a new kind of internet router to efficiently route packets over a network. This new router was aimed at addressing concerns about network "gridlock." In a 2001 interview with Wired Magazine, Dr. Roberts discussed the router he was developing at Caspian Networks – the Apeiro. "Roberts says the Apeiro will also create new revenue streams for the carriers by solving the 'voice and video problem.' IP voice and video, unlike email and static Web pages, breaks down dramatically if there's a delay - as little as a few milliseconds - in getting packets from host to recipient."[7]

Jim Duffy, *Router Newcomers take on Cisco, Juniper*, NETWORK WORLD at 14 (April 14, 2013); Stephen Lawson, *Caspian Testing Stellar Core Offering*, NETWORK WORLD at 33 (December 17, 2001); Tim Greene, *Caspian Plans Superfast Routing For The 'Net Core*, NETWORK WORLD at 10 (January 29, 2001); Andrew P. Madden, *Company Spotlight: Caspian Networks*, MIT TECHNOLOGY REVIEW at 33 (August 2005); and Loring Wirbel, *Caspian Moves Apeiro Router To Full Availability*, EE TIMES (April 14, 2003).

[6] Caspian Networks, Inc. was founded in 1998 as Packetcom, LLC and changed its name to Caspian Networks, Inc. in 1999.

[7] John McHugh, *The n-Dimensional Superswitch*, WIRED MAGAZINE (May 1, 2001).

6. The Apeiro debuted in 2003. The Apeiro, a flow-based router, can identify the nature of a packet – be it audio, text, or video, and prioritize it accordingly. The Apeiro included numerous technological advances including quality of service (QoS) routing and flow-based routing.

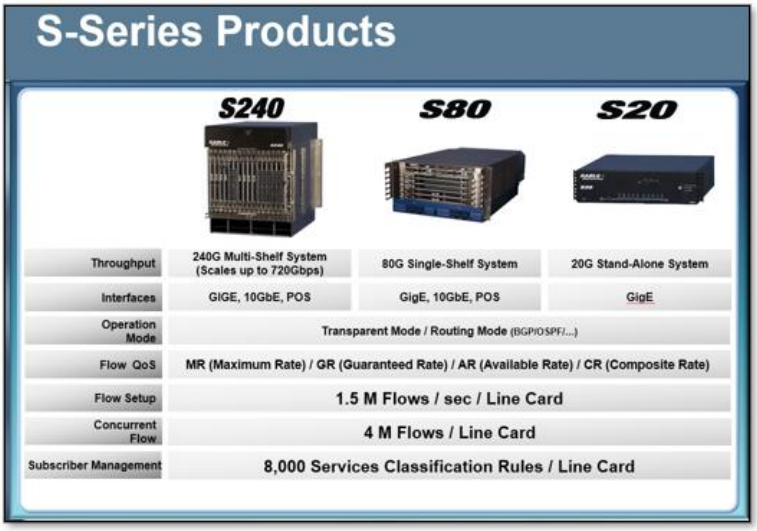
7. At its height, Caspian Networks Inc. raised more than $300 million dollars and grew to more than 320 employees in the pursuit of developing and commercializing Dr. Roberts' groundbreaking networking technologies, including building flow-based routers that advanced quality of service and load balancing performance. However, despite early success with its technology and business, Caspian hit hard times when the telecommunications bubble burst.

8. Sable Networks, Inc. was formed by Dr. Sang Hwa Lee to further develop and commercialize the flow-based networking technologies developed by Dr. Roberts and Caspian Networks.[8] Sable Networks, Inc. has continued its product development efforts and has gained commercial success with customers in Japan, South Korea, and China. Customers of Sable Networks, Inc. have included: SK Telecom, NTT Bizlink, Hanaro Telecom, Dacom Corporation, USEN Corporation, Korea Telecom, China Unicom, China Telecom, and China Tietong.

[8] Dr. Lee, through his company Mobile Convergence, Ltd. purchased the assets of Caspian Networks Inc. and subsequently created Sable Networks, Inc.

SK Telecom and Sable Networks Sign Convergence Network Deal, COMMS UPDATE – TELECOM NEWS SERVICE (February 4, 2009) ("South Korean operator SK Telecom has announced that it has signed a deal with US-based network and solutions provider Sable Networks."); *China Telecom Deploys Sable*, LIGHT READING NEWS FEED (November 19, 2007) ("Sable Networks Inc., a leading provider of service controllers, today announced that China Telecom Ltd, the largest landline telecom company in China, has deployed the Sable Networks Service Controller in their network.").

9. Armed with the assets of Caspian Networks Inc. as well as members of Caspian Networks' technical team, Sable Networks, Inc. continued the product development efforts stemming from Dr. Roberts' flow-based router technologies. Sable Networks, Inc. developed custom application-specific integrated circuits ("ASIC") designed for flow traffic management. Sable Network, Inc.'s ASICs include the Sable Networks SPI, which enables 20 Gigabit flow processing. In addition, Sable Networks, Inc. developed and released S-Series Service Controllers (*e.g.*, S80 and S240 Service Controller models) that contain Sable Networks' flow-based programmable ASICs, POS and Ethernet interfaces, and carrier-hardened routing and scalability from 10 to 800 Gigabits.



SABLE NETWORKS S-SERIES SERVICE CONTROLLERS (showing the S240-240G Multi-Shelf System, S80-80G Single-Shelf System, and S20-20G Stand-Alone System).

10. Sable pursues the reasonable royalties owed for Nokia's use of the inventions claimed in Sable's patent portfolio, which arise from Caspian Networks and Sable Networks' groundbreaking technology.

SABLE'S PATENT PORTFOLIO

11. Sable's patent portfolio includes over 34 patent assets, including 14 granted U.S. patents. Dr. Lawrence Roberts' pioneering work on QoS traffic prioritization, flow-based switching and routing, and the work of Dr. Roberts' colleagues at Caspian Networks Inc. and Sable Networks, Inc. are claimed in the various patents owned by Sable.

12. Highlighting the importance of the patents-in-suit is the fact that the Sable's patent portfolio has been cited by over 1,000 U.S. and international patents and patent applications assigned to a wide variety of the largest companies operating in the computer networking field. Sable's patents have been cited by companies such as:

- Cisco Systems, Inc.[9]

[9] *See, e.g.*, U.S. Patent Nos. 7,411,965; 7,436,830; 7,539,499; 7,580,351; 7,702,765; 7,817546; 7,936,695; 8,077,721; 8,493,867; 8,868,775; and 9,013,985.

- Juniper Networks, Inc.[10]
- Broadcom Limited[11]
- EMC Corporation[12]
- F5 Networks, Inc.[13]
- Verizon Communications Inc.[14]
- Microsoft Corporation[15]
- Intel Corporation[16]
- Extreme Networks, Inc.[17]
- Huawei Technologies Co., Ltd.[18]

THE PARTIES

SABLE NETWORKS, INC.

13. Sable Networks, Inc. ("Sable Networks") is a corporation organized and existing under the laws of the State of California.

14. Sable Networks was formed to continue the research, development, and commercialization work of Caspian Networks Inc., which was founded by Dr. Lawrence Roberts to provide flow-based switching and routing technologies to improve the efficiency and quality of computer networks.

15. Sable Networks is the owner by assignment of all of the patents-in-suit.

[10] *See, e.g.*, U.S. Patent Nos. 7,463,639; 7,702,810; 7,826,375; 8,593,970; 8,717,889; 8,811,163; 8,811,183; 8,964,556; 9,032,089; 9,065,773; and 9,832,099.

[11] *See, e.g.*, U.S. Patent No. 7,187,687; 7,206,283; 7,266,117; 7,596,139; 7,649,885; 8,014,315; 8,037,399; 8,170,044; 8,194,666; 8,271,859; 8,448,162; 8,493,988; 8,514,716; and 7,657,703.

[12] *See, e.g.*, U.S. Patent Nos. 6,976,134; 7,185,062; 7,404,000; 7,421,509; 7,864,758; and 8,085,794.

[13] *See, e.g.*, U.S. Patent Nos. 7,206,282; 7,580,353; 8,418,233; 8,565,088; 9,225,479; 9,106,606; 9,130,846; 9,210,177; 9,614,772; 9,967,331; and 9,832,069.

[14] *See, e.g.*, U.S. Patent Nos. 7,349,393; 7,821,929; 8,218,569; 8,289,973; 9,282,113; and 8,913,623.

[15] *See, e.g.*, U.S. Patent Nos. 7,567,504; 7,590,736; 7,669,235; 7,778,422; 7,941,309; 7,636,917; 9,571,550; and 9,800,592.

[16] *See, e.g.*, U.S. Patent Nos. 7,177,956; 7,283,464; 9,485,178; 9,047,417; 8,718,096; 8,036,246; 8,493,852; and 8,730,984.

[17] *See, e.g.*, U.S. Patent Nos. 7,903,654; 7,978,614; 8,149839; 10,212,224; 9,112,780; and 8,395,996.

[18] *See, e.g.*, U.S. Patent Nos. 7,903,553; 7,957,421; 10,015,079; 10,505,840; and Chinese Patent Nos. CN108028828 and CN106161333.

SABLE IP, LLC

16. Sable IP, LLC ("Sable IP") is a Delaware limited liability company with its principal place of business at 225 S. 6th Street, Suite 3900, Minneapolis, Minnesota 55402. Pursuant to an exclusive license agreement with Sable Networks, Sable IP is the exclusive licensee of the patents-in-suit.

NOKIA DEFENDANTS

17. Nokia Corporation is a corporation organized and existing under the laws of Finland with its principal place of business at Karakaari 7, FI-02610, Espoo, Finland.

18. Nokia of America Corporation is a Delaware corporation with its principal place of business at 600 Mountain Avenue, Murray Hill, New Jersey 07974. Nokia of America Corporation may be served through its registered agent Prentice Hall Corporation System, 211 E. 7th Street, Suite 620, Austin, Texas 78701. On information and belief, Nokia of America Corporation is registered to do business in the State of Texas and has been since at least December 29, 1995.

19. Alcatel-Lucent USA, Inc. was merged into Nokia of America Corporation. Nokia of America Corporation is the successor-in-interest of Nokia Solutions and Networks US LLC.

20. Nokia Solutions and Networks Oy is a corporation organized and existing under the laws of Finland with its principal place of business at Karaportti 3, FI-02610, Espoo, Finland. On information and belief, Nokia Solutions and Networks Oy is registered to do business in the State of Texas and has been since at least May 30, 2008, and may be served through its registered agent, Corporation Service Company d/b/a CSC-Lawyers Incorporating Service, 211 E. 7th Street, Suite 620, Austin, Texas 78701.

21. Nokia conducts business operations within the Western District of Texas in its facilities at 12515 Research Blvd., Building 5, Austin, Texas 78759. Nokia has offices in the

Western District of Texas where it sells, develops, and/or markets its products including offices in Austin, Texas.

JURISDICTION AND VENUE

22. This action arises under the patent laws of the United States, Title 35 of the United States Code. Accordingly, this Court has exclusive subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338(a).

23. This Court has personal jurisdiction over Nokia in this action because Nokia has committed acts within the Western District of Texas giving rise to this action and has established minimum contacts with this forum such that the exercise of jurisdiction over Nokia would not offend traditional notions of fair play and substantial justice. Defendant Nokia, directly and/or through subsidiaries or intermediaries (including distributors, retailers, and others), has committed and continues to commit acts of infringement in this District by, among other things, offering to sell and selling products and/or services that infringe the patents-in-suit. Moreover, Nokia has offices and facilities in the State of Texas and actively directs its activities to customers located in the State of Texas.

24. Venue is proper in this district under 28 U.S.C. §§ 1391(b)-(d) and 1400(b). Defendant Nokia has offices in the State of Texas, has transacted business in the Western District of Texas, and has committed acts of direct and indirect infringement in the Western District of Texas.

25. This Court has personal jurisdiction over Nokia. Nokia has conducted and does conduct business within the State of Texas. Nokia, directly or through subsidiaries or intermediaries (including distributors, retailers, and others), ships, distributes, makes, uses, offers for sale, sells, imports, and/or advertises (including by providing an interactive web page) its products and/or services in the United States and the Western District of Texas and/or contributes

to and actively induces its customers to ship, distribute, make, use, offer for sale, sell, import, and/or advertise (including the provision of an interactive web page) infringing products and/or services in the United States and the Western District of Texas. Nokia, directly and through subsidiaries or intermediaries (including distributors, retailers, and others), has purposefully and voluntarily placed one or more of its infringing products and/or services, as described below, into the stream of commerce with the expectation that those products will be purchased and used by customers and/or consumers in the Western District of Texas. These infringing products and/or services have been and continue to be made, used, sold, offered for sale, purchased, and/or imported by customers and/or consumers in the Western District of Texas. Nokia has committed acts of patent infringement within the Western District of Texas. Nokia interacts with customers in Texas, including through visits to customer sites in Texas. Through these interactions and visits, Nokia directly infringes the patents-in-suit. Nokia also interacts with customers who sell the Accused Products into Texas, knowing that these customers will sell the Accused Products into Texas, either directly or through intermediaries.

26. Nokia has minimum contacts with this District such that the maintenance of this action within this District would not offend traditional notions of fair play and substantial justice. Thus, the Court therefore has both general and specific personal jurisdiction over Nokia.

THE ASSERTED PATENTS

U.S. PATENT NO. 6,954,431

27. U.S. Patent No. 6,954,431 (the "'431 patent") entitled, *Micro-Flow Management*, was filed on December 6, 2001, and claims priority to April 19, 2000. The '431 patent is subject to a 35 U.S.C. § 154(b) term extension of 722 days. Sable Networks, Inc. is the owner by assignment of the '431 patent. Sable IP is the exclusive licensee of the '431 patent. A true and correct copy of the '431 patent is attached hereto as Exhibit A.

28. The ‘431 patent discloses novel methods and systems for managing data traffic comprising a plurality of micro-flows through a network.

29. The inventions disclosed in the ‘431 patent improve the quality of service in data transmissions over a computer network by relying on per micro-flow state information that enables rate and delay variation requirements to be within set quantified levels of service.

30. The ‘431 patent discloses technologies that speed the rate at which data can effectively travel over a computer network by optimizing packet discarding.

31. The ‘431 patent discloses the use of micro-flow state information to determine the rate of each flow, thus optimizing discards and optimizing the quality of service of data transmission.

32. The ‘431 patent discloses methods and systems that avoid networking system degradation by not overloading network switch buffers.

33. The ‘431 patent discloses a method for managing data traffic through a network that determines a capacity of a buffer containing a micro-flow based on a characteristic.

34. The ‘431 patent discloses a method for managing data traffic through a network that assigns an acceptable threshold value for the capacity of the buffer over a predetermined period of time.

35. The ‘431 patent discloses a method for managing data traffic through a network that delegates a portion of available bandwidth in the network to the micro-flow.

36. The ‘431 patent discloses a method for managing data traffic through a network that uses the buffer for damping jitter associated with the micro-flow.

37. The ‘431 patent has been cited by 103 patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the ‘431 patent as relevant prior art:

- Cisco Systems, Inc.
- Juniper Networks, Inc.
- Broadcom Limited
- Intel Corporation
- Sun Microsystems, Inc.
- Oracle Corporation
- Samsung Electronics Co., Ltd.
- Adtran, Inc.
- Time Warner Cable, Inc.
- FSA Technologies, Inc.
- Internap Corporation
- France Telecom
- The Boeing Company
- Wistaria Trading, Ltd.

U.S. PATENT NO. 6,977,932

38. U.S. Patent No. 6,977,932 (the “’932 patent”) entitled, *System and Method for Network Tunneling Utilizing Micro-Flow State Information*, was filed on January 16, 2002. The ‘932 patent is subject to a 35 U.S.C. § 154(b) term extension of 815 days. Sable Networks, Inc. is the owner by assignment of the ‘932 patent. Sable IP is the exclusive licensee of the ‘932 patent. A true and correct copy of the ‘932 patent is attached hereto as Exhibit B.

39. The ‘932 patent discloses novel methods and apparatuses for utilizing a router capable of network tunneling utilizing flow state information.

40. The inventions disclosed in the ‘932 patent enable the use of micro-flow state information to improve network tunneling techniques.

41. The inventions disclosed in the ‘932 patent maintain flow state information for various quality of service characteristics by utilizing aggregate flow blocks.

42. The aggregate flow blocks disclosed in the '932 patent maintain micro-flow block information.

43. The technologies claimed in the '932 patent speed the flow of network traffic over computer networks by avoiding time consuming and processor intensive tasks by combining flow state information with other information such as label switched paths utilization information. This permits the micro-flows associated with an aggregate flow block to all be processed in a similar manner.

44. The technologies disclosed in the '932 patent result in more efficient computer networks by avoiding the processor intensive tasks of searching millions of flow blocks to identify flow blocks having certain micro-flow characteristics in order to process large numbers of micro-flows.

45. The '932 patent discloses a router capable of network tunneling utilizing flow state information containing an aggregate flow block having tunnel specific information for a particular network tunnel.

46. The '932 patent discloses a router capable of network tunneling utilizing flow state information containing a flow block having flow state information for a micro-flow, the flow block further including an identifier that associates the flow block with the aggregate flow block.

47. The '932 patent discloses a router capable of network tunneling utilizing flow state information wherein the aggregate flow block stores statistics for the particular network tunnel.

48. The '932 patent has been cited by 86 patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the '932 patent as relevant prior art:

- Cisco Systems, Inc.
- Juniper Networks, Inc.

- Avaya, Inc.
- Fujitsu, Ltd.
- Intel Corporation
- ***Nokia Corporation***
- Qualcomm, Inc.
- Sprint Communications Co.
- Telefonaktiebolaget LM Ericsson
- Verizon Communications, Inc.

U.S. PATENT NO. 7,012,919

49. U.S. Patent No. 7,012,919 (the "'919 patent") entitled, *Micro-Flow Label Switching*, was filed on December 8, 2000, and claims priority to April 19, 2000. The '919 patent is subject to a 35 U.S.C. § 154(b) term extension of 1,069 days. Sable Networks, Inc. is the owner by assignment of the '919 patent. Sable IP is the exclusive licensee of the '919 patent. A true and correct copy of the '919 patent is attached hereto as Exhibit C.

50. The '919 patent claims specific methods and systems for providing aggregate micro-flows.

51. The technologies claimed in the '919 patent improve data transmission in computer networks by providing micro-flow based label switched path utilization.

52. The inventions taught in the '919 patent achieve improvements in intelligent network traffic engineering protocols by providing load balancing based on the utilization of individual label switched paths.

53. In one embodiment described in the '919 patent, a method for providing an aggregate micro-flow having intelligent load balancing is disclosed.

54. In this embodiment, a set of label switched paths is defined for a network domain, and as the network receives a set of data packets, a micro-flow comprising the set of data packets is defined.

55. The ‘919 patent further discloses including a quality of service type in addition to the information included in each data packet.

56. The ‘919 patent teaches selecting a label switched path from the defined set of label switched paths based on the quality of service type of the micro-flow.

57. The ‘919 patent discloses a method for providing aggregate micro-flows that defines a set of label switched paths.

58. The ‘919 patent discloses a method for providing aggregate micro-flows that defines a micro-flow comprising a set of data packets, the micro-flow having a quality of service type.

59. The ‘919 patent discloses a method for providing aggregate micro-flows that selects a particular label switched path from the defined set of label switched paths based on the quality of service type of the micro-flow.

60. The ‘919 patent discloses a method for providing aggregate micro-flows that transmits the micro-flow along the selected label switched path, the micro-flow having an associated forwarding equivalence class, the forwarding equivalence class defining additional transmission constraints for the micro-flow.

61. The ‘919 patent has been cited by 242 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the ‘919 patent family as relevant prior art.

- Cisco Systems, Inc.
- Juniper Networks, Inc.
- Advanced Micro Devices, Inc.
- AT&T, Inc.
- Broadcom, Inc.
- Brocade Communications Systems, Inc.
- Arris Enterprises LLC
- Nicira, Inc.

- Extreme Networks, Inc.
- Fortinet, Inc.
- Foundry Networks, Inc.
- Fujitsu Ltd.
- Intel Corporation
- Huawei Technologies Co., Ltd.
- Hitachi, Ltd.
- Hewlett Packard Enterprise Company
- Marlow Technologies, LLC
- Microsoft Corporation
- ServiceNow, Inc.
- Telefonaktiebolaget LM Ericsson
- Telcordia Technologies, Inc.
- Riverbed Technology, Inc.
- Uber Technologies, Inc.
- The Regents of the University of California
- Verizon Communications, Inc.

U.S. PATENT NO. 8,243,593

62. U.S. Patent No. 8,243,593 entitled, *Mechanism for Identifying and Penalizing Misbehaving Flows in a Network,* was filed on December 22, 2004. The '593 patent is subject to a 35 U.S.C. § 154(b) term extension of 1,098 days. Sable Networks, Inc. is the owner by assignment of the '593 patent. Sable IP is the exclusive licensee of the '593 patent. A true and correct copy of the '593 patent is attached hereto as Exhibit D.

63. The '593 patent discloses novel methods and systems for processing a flow of a series of information packets.

64. The inventions disclosed in the '593 patent teach technologies that permit the identification and control of less desirable network traffic.

65. Because the characteristics of data packets in undesirable network traffic can be disguised, the '593 patent improves the operation of computer networks by disclosing technologies that monitor the characteristics of flows of data packets rather than ancillary factors such as port numbers or signatures.

66. The ‘593 patent discloses tracking the behavioral statistics of a flow of data packets that can be used to determine whether the flow is undesirable.

67. The ‘593 patent further discloses taking actions to penalize the flow of undesirable network traffic.

68. The ‘593 patent discloses a method for processing a flow of a series of information packets that maintains a set of behavioral statistics for the flow, wherein the set of behavioral statistics is updated based on each information packet belonging to the flow, as each information packet is processed.

69. The ‘593 patent discloses a method for processing a flow of a series of information packets that determines, based at least partially upon the set of behavioral statistics, whether the flow is exhibiting undesirable behavior.

70. The ‘593 patent discloses that the determination as to whether the flow is exhibiting undesirable behavior is made regardless of the presence or absence of congestion.

71. The ‘593 patent discloses a method for processing a flow of data packets that enforces a penalty on the flow in response to a determination that the flow is exhibiting undesirable behavior.

72. The ‘593 patent has been cited by 17 patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the ‘593 patent as relevant prior art.

- Cisco Systems, Inc.
- AT&T, Inc.
- International Business Machines Corporation
- Telecom Italia S.p.A.
- McAfee, LLC

U.S. PATENT NO. 8,817,790

73. U.S. Patent No. 8,817,790 (the "'790 patent") entitled, *Identifying Flows Based on Behavior Characteristics and Applying User-Defined Actions*, was filed on September 23, 2011, and claims priority to July 31, 2006. Sable Networks, Inc. is the owner by assignment of the '790 patent. Sable IP is the exclusive licensee of the '790 patent. A true and correct copy of the '790 patent is attached hereto as Exhibit E.

74. The '790 patent claims specific methods and devices for handling a flow of information packets.

75. The '790 patent discloses methods and systems for efficiently identifying undesirable traffic over data networks.

76. The '790 patent teaches technologies that identify traffic not by inspecting the payload of each data packet, but rather by analyzing and classifying the behavior of the data flows to identify undesirable traffic.

77. The '790 patent discloses applying a user-specified action associated with a policy applicable to data flows that are designated undesirable.

78. The '790 patent discloses a method of handling a flow that processes a flow comprised of two or more information packets having header information in common.

79. The '790 patent discloses a method of handling a flow that stores header-independent statistics about the flow in a flow block associated with the flow.

80. The '790 patent discloses a method of handling a flow that updates the header-independent statistics in the flow block as each information packet belonging to the flow is processed.

81. The '790 patent discloses a method of handling a flow that categorizes the flow as one or more traffic types by determining whether the header-independent statistics match one or more profiles corresponding to a traffic type.

82. The '790 patent discloses a method of handling a flow that performs an operation that is determined according to the one or more traffic types on one or more information packets belonging to the flow if the one or more traffic types match one or more particular traffic types designated by a user.

83. The '790 patent family has been cited by 24 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the '790 patent family as relevant prior art:

- Cisco Systems, Inc.
- Solana Networks, Inc.
- British Telecommunications Public Limited Company
- Level 3 Communications, LLC
- Calix, Inc.
- ***Nokia Corporation***
- Verizon Communications, Inc.
- Sprint Spectrum L.P.
- Hon Hai Precision Industry Co., Ltd.

COUNT I
INFRINGEMENT OF U.S. PATENT NO. 6,954,431

84. Plaintiffs reference and incorporate by reference the preceding paragraphs of this Complaint as if fully set forth herein.

85. Nokia designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for managing data traffic comprising a plurality of micro-flows through a network.

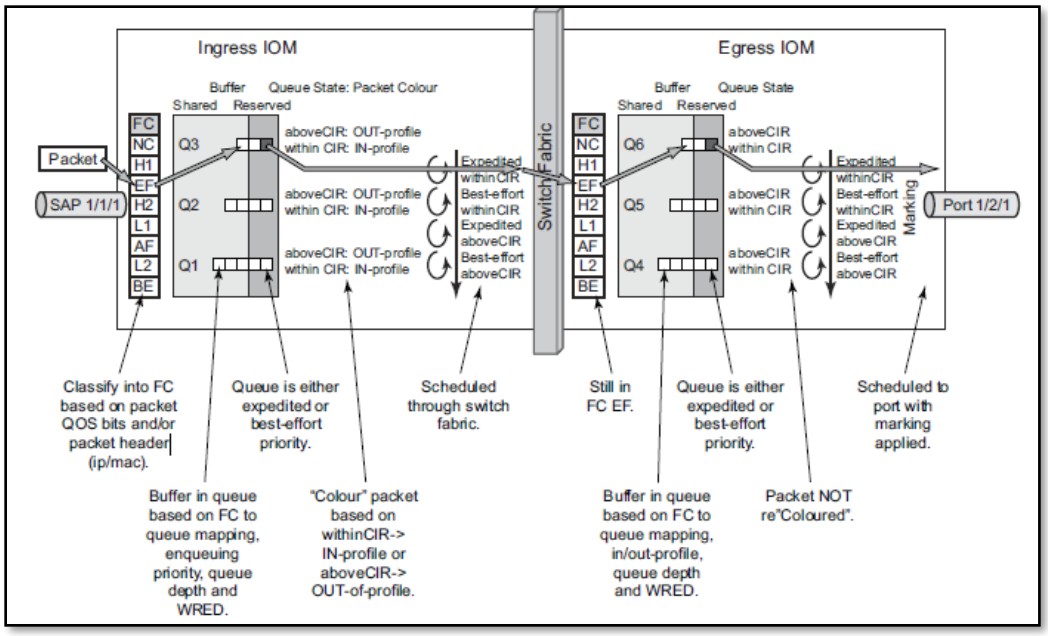
86. Nokia designs, makes, sells, offers to sell, imports, and/or uses the following products: the Nokia 7450 Ethernet Service Switch Release 14.0 and later (including the following

models: ESS-12 and ESS-7); Nokia 7750 Service Router Release 14.0 and later (including the following models: 7750 SR-1s, 7750 SR-2s, 7750 SR-7s, 7750 SR-14s, 7750 SR-a4, 7750 SR-a8, 7750 SR-1, 7750 SR-7, 7750 SR-12, 7750 SR-12e, 7750 SR-1e, 7750 SR-2e, and 7750 SR-3e); Nokia 7950 Extensible Routing System Release 14.0 and later (including the following models: 7950 XRS-20e and 7950 XRS-20); Nokia Virtualized Service Router Release 15.0 and later; and Nokia 7705 Service Aggregation Router Release 6.1 and later (including the following models: 7705 SAR-X, 7705 SAR-A, 7705 SAR-Ax, 7705 SAR-M, 7705 SAR-8, 7705 SAR-18, 7705 SAR-H, 7705 SAR-Hc, and 7705 SAR-Wx) (collectively, the "Nokia '431 Product(s)").

87. One or more Nokia subsidiaries and/or affiliates use the Nokia '431 Products in regular business operations.

88. One or more of the Nokia '431 Products include technology for managing data traffic comprising a plurality of micro-flows through a network.

89. The Nokia '431 Products include ingress and egress input/output modules. When a packet is received by the ingress IOM it is associated with a forwarding class based on the either the quality of service bits or the packet header. This process is shown in the following excerpt from Nokia documentation.



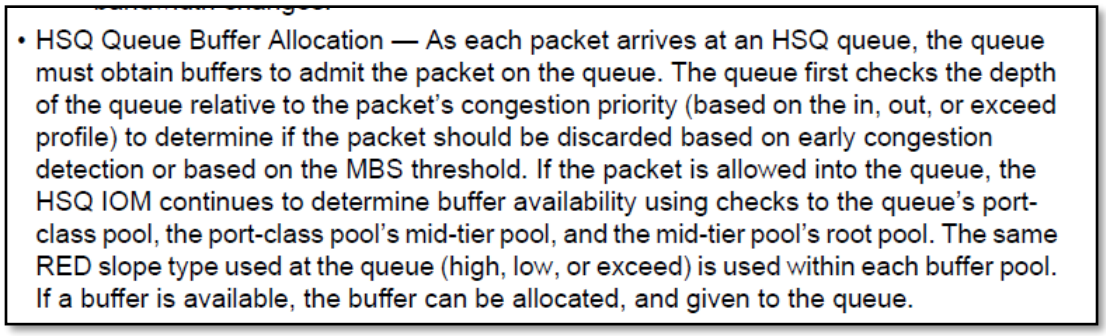
7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System- Advanced Configuration Guide - Part II Releases Up To 15.0.R5, NOKIA DOCUMENTATION at 1570 (November 2017).

90. One or more of the Nokia '431 Products determine the capacity of a buffer containing a micro-flow based on a characteristic.

91. One or more of the Nokia '431 Products assign an acceptable threshold value for the capacity of the buffer over a predetermined period of time.

92. One or more of the Nokia '431 Products delegate a portion of available bandwidth in the network to the micro-flow.

93. The Nokia '431 Products assign packets associated with a flow to a buffer and assign the buffer a size.

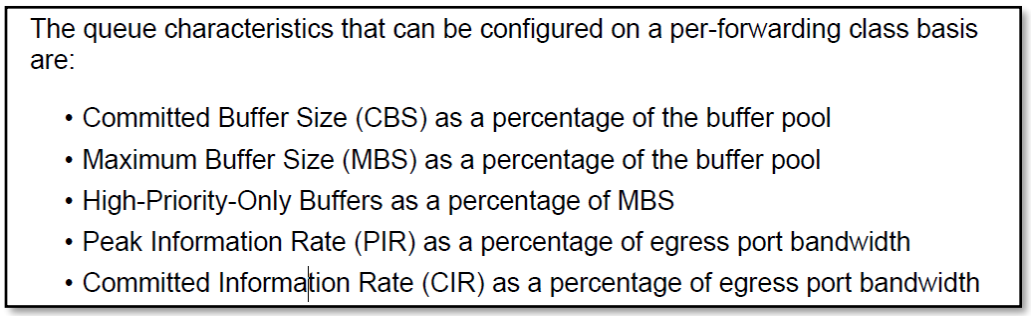


- HSQ Queue Buffer Allocation — As each packet arrives at an HSQ queue, the queue must obtain buffers to admit the packet on the queue. The queue first checks the depth of the queue relative to the packet's congestion priority (based on the in, out, or exceed profile) to determine if the packet should be discarded based on early congestion detection or based on the MBS threshold. If the packet is allowed into the queue, the HSQ IOM continues to determine buffer availability using checks to the queue's port-class pool, the port-class pool's mid-tier pool, and the mid-tier pool's root pool. The same RED slope type used at the queue (high, low, or exceed) is used within each buffer pool. If a buffer is available, the buffer can be allocated, and given to the queue.

7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System, Virtualized Service Router – Quality of Service Guide Release 20.7.R1, NOKIA DOCUMENTATION AT 931 (July 2020).

94. The Nokia '431 Products enable the setting of thresholds for a buffer that include the ability to set a threshold as a percentage of the buffer.

95. The Nokia '431 Products enable the use of network queue policies that define the queue characteristics that are used in determining the scheduling and queuing behavior of one or more forwarding classes.

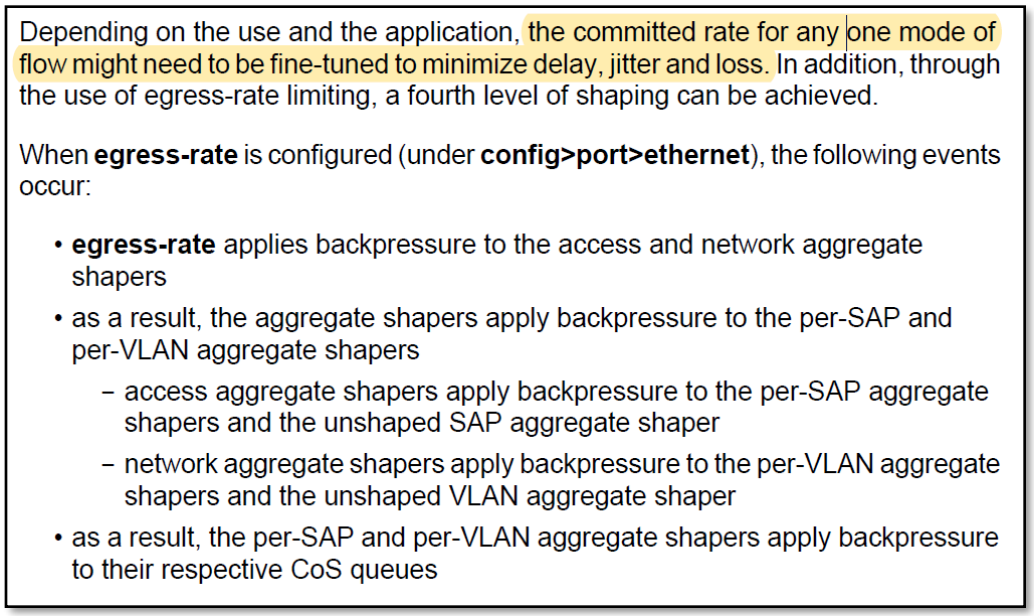


The queue characteristics that can be configured on a per-forwarding class basis are:

- Committed Buffer Size (CBS) as a percentage of the buffer pool
- Maximum Buffer Size (MBS) as a percentage of the buffer pool
- High-Priority-Only Buffers as a percentage of MBS
- Peak Information Rate (PIR) as a percentage of egress port bandwidth
- Committed Information Rate (CIR) as a percentage of egress port bandwidth

7705 Service Aggregation Router Release 20.4.R1 Quality of Service Guide, NOKIA DOCUMENTATION at 50 (April 2020).

96. One or more of the Nokia '431 Products use the buffer for damping jitter associated with the micro-flow.



Depending on the use and the application, the committed rate for any one mode of flow might need to be fine-tuned to minimize delay, jitter and loss. In addition, through the use of egress-rate limiting, a fourth level of shaping can be achieved.

When **egress-rate** is configured (under **config>port>ethernet**), the following events occur:

- **egress-rate** applies backpressure to the access and network aggregate shapers
- as a result, the aggregate shapers apply backpressure to the per-SAP and per-VLAN aggregate shapers
  - access aggregate shapers apply backpressure to the per-SAP aggregate shapers and the unshaped SAP aggregate shaper
  - network aggregate shapers apply backpressure to the per-VLAN aggregate shapers and the unshaped VLAN aggregate shaper
- as a result, the per-SAP and per-VLAN aggregate shapers apply backpressure to their respective CoS queues

7705 Service Aggregation Router Release 20.4.R1 Quality of Service Guide, NOKIA DOCUMENTATION at 50 (April 2020) (emphasis added).

97. The Nokia '431 Products use buffers to limit jitter which is delay variance.

98. Nokia has directly infringed and continues to directly infringe the '431 patent by, among other things, making, using, offering for sale, and/or selling technology for managing data traffic comprising a plurality of micro-flows through a network, including but not limited to the Nokia '431 Products.

99. The Nokia '431 Products are available to businesses and individuals throughout the United States.

100. The Nokia '431 Products are provided to businesses and individuals located in the Western District of Texas.

101. By making, using, testing, offering for sale, and/or selling products and services for managing data traffic comprising a plurality of micro-flows through a network, including but not limited to the Nokia '431 Products, Nokia has injured Plaintiffs and is liable to Plaintiffs for

directly infringing one or more claims of the '431 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

102. Nokia also indirectly infringes the '431 patent by actively inducing infringement under 35 U.S.C. § 271(b).

103. Nokia has had knowledge of the '431 patent since at least service of this Complaint or shortly thereafter, and Nokia knew of the '431 patent and knew of its infringement, including by way of this lawsuit.

104. Nokia intended to induce patent infringement by third-party customers and users of the Nokia '431 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Nokia specifically intended and was aware that the normal and customary use of the accused products would infringe the '431 patent. Nokia performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '431 patent and with the knowledge that the induced acts would constitute infringement. For example, Nokia provides the Nokia '431 Products that have the capability of operating in a manner that infringe one or more of the claims of the '431 patent, including at least claim 1, and Nokia further provides documentation and training materials that cause customers and end users of the Nokia '431 Products to utilize the products in a manner that directly infringe one or more claims of the '431 patent.[19] By providing

[19] *See, e.g.*, *Nokia 7750 Service Router Release 15.1*, NOKIA DATASHEET (April 2018); *7750 SR OS Router Configuration Guide*, ALCATEL LUCENT DOCUMENTATION (February 2010); Roland Thienpont, *IP routing and mobile packet core update*, SREXPERTS MOSCOW PRESENTATION (June 12, 2016); *7705 Service Aggregation Router Card and Module Support Quick Reference Card Release 8.0*, NOKIA PLATFORM NOTES (November 2017); *7705 Service Aggregation Router Release 9.0.R7*, BASIC SYSTEM CONFIGURATION GUIDE (October 2019); *Alcatel-Lucent 7705 Service Aggregation Router OS Release 2.1*, ROUTER CONFIGURATION GUIDE (2009); *7705 Service Aggregation Router - Quality of Service Guide Edition 1 - Release 20.4.R1*, NOKIA DOCUMENTATION (April 2020); *7705 Service Aggregation Router Data Sheet Release 20.4*, NOKIA DOCUMENTATION (2020); *Alcatel-Lucent 7705 Service Aggregation Router OS - Quality Of Service Guide - Release 6.1.R4*, NOKIA DOCUMENTATION (2014); *7705 SAR-Hm & 7705*

instruction and training to customers and end-users on how to use the Nokia '431 Products in a manner that directly infringes one or more claims of the '431 patent, including at least claim 1, Nokia specifically intended to induce infringement of the '431 patent. Nokia engaged in such inducement to promote the sales of the Nokia '431 Products, e.g., through Nokia user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '431 patent. Accordingly, Nokia has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '431 patent, knowing that such use constitutes infringement of the '431 patent.

105. The '431 patent is well-known within the industry as demonstrated by multiple citations to the '431 patent in published patents and patent applications assigned to technology companies and academic institutions. Nokia is utilizing the technology claimed in the '431 patent without paying a reasonable royalty. Nokia is infringing the '431 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

106. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '431 patent.

SAR-Hmc - Release 20.7.R1 -Main Configuration Guide Edition 1, NOKIA DOCUMENTATION (July 2020); *7705 Service Aggregation Router - Release 20.4.R1 -System Management Guide Edition*, NOKIA DOCUMENTATION (April 2020); *7705 Service Aggregation Router - Release 20.4.R1 -Services Guide Edition 1*, NOKIA DOCUMENTATION (April 2020); *7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System - Advanced Configuration Guide – Part III Release 20.2.R2*, NOKIA DOCUMENTATION (May 2020); *7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System - Advanced Configuration Guide - Part I Release 20.2.R2*, NOKIA DOCUMENTATION (May 2020); *7450 Ethernet Service Switch, 7750 Service Router, Virtualized Service Router - Multiservice ISA and ESA Guide - Release 20.7.R1*, NOKIA DOCUMENTATION (July 2020); and *7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System, Virtualized Service Router - Quality of Service Guide - Release 20.7.R1*, NOKIA DOCUMENTATION (July 2020).

107. As a result of Nokia's infringement of the '431 patent, Plaintiffs have suffered monetary damages, and seek recovery in an amount adequate to compensate for Nokia's infringement, but in no event less than a reasonable royalty for the use made of the invention by Nokia together with interest and costs as fixed by the Court.

COUNT II
INFRINGEMENT OF U.S. PATENT NO. 6,977,932

108. Plaintiffs reference and incorporate by reference the preceding paragraphs of this Complaint as if fully set forth herein.

109. Nokia designs, makes, sells, offers to sell, imports, and/or uses the following products: the Nokia 5620 Service Aware Manager Release 13.0 and later; Nokia Network Services Platform (NSP) Release 17.3 and later; Nokia 7450 Ethernet Service Switch Release 12.0 and later (including the following models: ESS-12, ESS-7); Nokia 7750 Service Router Release 12.0 and later (including the following models: 7750 SR-1s, 7750 SR-2s, 7750 SR-7s, 7750 SR-14s, 7750 SR-a4, 7750 SR-a8, 7750 SR-1, 7750 SR-7, 7750 SR-12, 7750 SR-12e, 7750 SR-1e, 7750 SR-2e, and 7750 SR-3e); and Nokia 7950 Extensible Routing System Release 12.0 and later (including the following models: 7950 XRS-20e and 7950 XRS-20) (collectively, the "Nokia '932 Product(s)").

110. One or more Nokia subsidiaries and/or affiliates use the Nokia '932 Products in regular business operations.

111. Nokia has directly infringed and continues to directly infringe the '932 patent by, among other things, making, using, offering for sale, and/or selling technology that utilize flow state information to perform a method of network tunneling.

112. One or more of the Nokia '932 Products utilize flow state information to perform network tunneling.

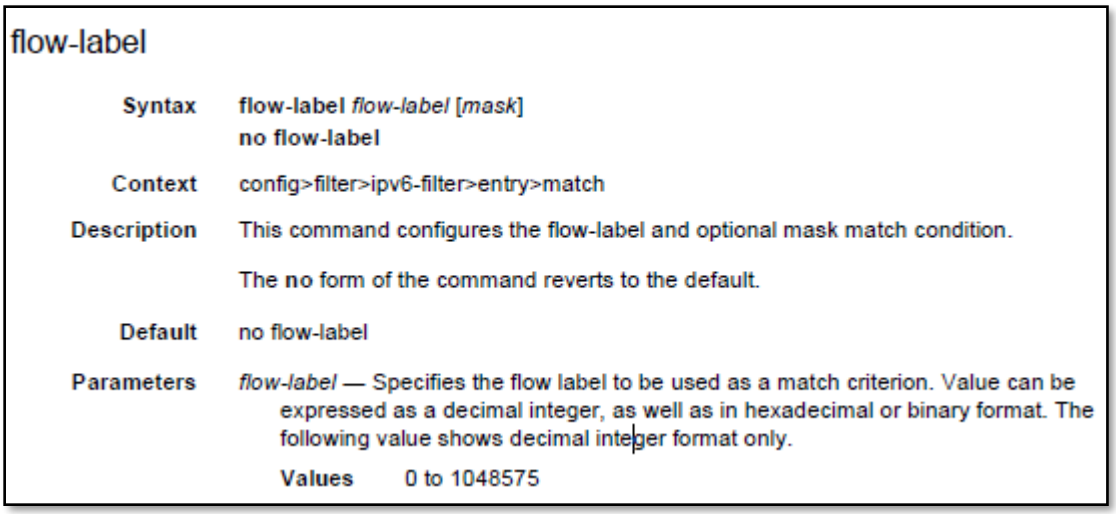
113. One or more of the Nokia '932 Products create a flow block having flow state information for a received first data packet of a micro-flow.

> An OpenFlow switch may have one or more flow tables, each of which contains one or more flow entries. A flow is a sequence of packets that matches a specific entry in a flow table. When a packet is processed by a flow table, it is matched against flow entries that contain match fields and a priority to uniquely identify each entry. Match fields consist of criteria to match against a packet, such as ingress port/VLAN, source/destination IP address, protocol, or source/destination port.
>
> The sequence with which a packet is parsed through a flow table that consists of multiple flow entries depends on the priority of each flow entry. The highest priority flow entry is processed first, and if no match is found, the packet continues to the next highest flow entry until a packet is either matched by a flow entry or all flow entries are parsed and no match is found. Priority 0 is reserved for the table-miss flow entry, which is used when a packet does not match any other flow entries in the flow table. In this case, the packet could be forwarded, dropped, or sent to the OpenFlow controller using a Packet-In message.

7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System Advanced Configuration Guide Part I Releasees Up To 16.0.R7, NOKIA DOCUMENTATION at 290 (June 2019).

114. One or more of the Nokia '932 Products store a tunnel identifier for the micro-flow in the flow block, the tunnel identifier identifying a selected network tunnel to be used to transmit the data packet.

115. The Nokia '932 Products use a "flow-label" which can be used as a match criteria and is expressed as a value between 0 and 1048575.



flow-label

Syntax **flow-label** *flow-label* [*mask*]
no flow-label

Context config>filter>ipv6-filter>entry>match

Description This command configures the flow-label and optional mask match condition.

The **no** form of the command reverts to the default.

Default no flow-label

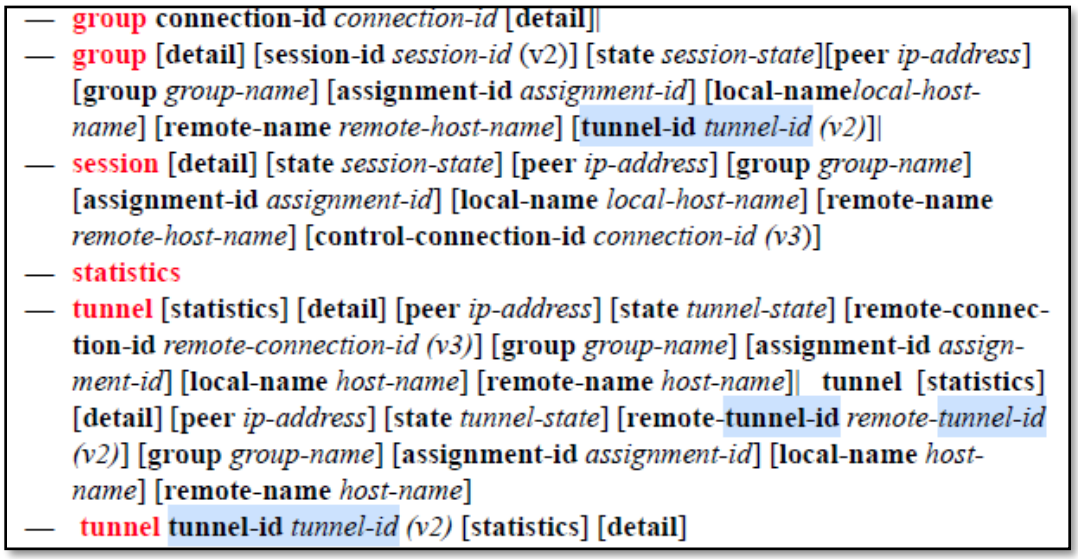
Parameters *flow-label* — Specifies the flow label to be used as a match criterion. Value can be expressed as a decimal integer, as well as in hexadecimal or binary format. The following value shows decimal integer format only.

Values 0 to 1048575

7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System, Virtualized Service Router Release 15.0.R4 Router Configuration Guide, NOKIA DOCUMENTATION at 642 (July 2017).

116. One or more of the Nokia '932 Products index an aggregate flow block using the tunnel identifier.

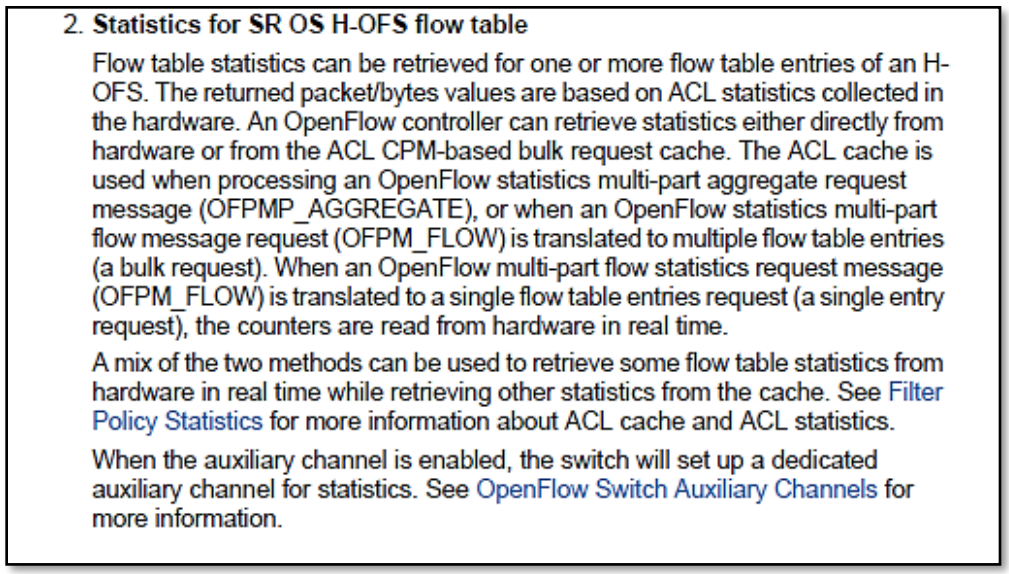
117. One or more of the Nokia '932 Products utilize an aggregate flow block with tunnel specific information for the selected network tunnel and that stores statistics for the selected network tunnel.



— **group connection-id** *connection-id* **[detail]**|
— **group [detail] [session-id** *session-id* (v2)**] [state** *session-state*][**peer** *ip-address*] [**group** *group-name*] [**assignment-id** *assignment-id*] [**local-name***local-host-name*] [**remote-name** *remote-host-name*] [**tunnel-id** *tunnel-id (v2)*]|
— **session [detail] [state** *session-state*] [**peer** *ip-address*] [**group** *group-name*] [**assignment-id** *assignment-id*] [**local-name** *local-host-name*] [**remote-name** *remote-host-name*] [**control-connection-id** *connection-id (v3)*]
— **statistics**
— **tunnel [statistics] [detail] [peer** *ip-address*] [**state** *tunnel-state*] [**remote-connection-id** *remote-connection-id (v3)*] [**group** *group-name*] [**assignment-id** *assignment-id*] [**local-name** *host-name*] [**remote-name** *host-name*]| **tunnel [statistics] [detail] [peer** *ip-address*] [**state** *tunnel-state*] [**remote-tunnel-id** *remote-tunnel-id (v2)*] [**group** *group-name*] [**assignment-id** *assignment-id*] [**local-name** *host-name*] [**remote-name** *host-name*]
— **tunnel tunnel-id** *tunnel-id (v2)* **[statistics] [detail]**

Alcatel-Lucent 7750 Service Router Release 13.0.R4 Router Configuration Guide, NOKIA DOCUMENTATION at 125 (2015) (emphasis added).

118. The Nokia ‘932 Products support the storage of statistics in a flow table that includes statistics related to one or more network tunnels.



2. **Statistics for SR OS H-OFS flow table**

Flow table statistics can be retrieved for one or more flow table entries of an H-OFS. The returned packet/bytes values are based on ACL statistics collected in the hardware. An OpenFlow controller can retrieve statistics either directly from hardware or from the ACL CPM-based bulk request cache. The ACL cache is used when processing an OpenFlow statistics multi-part aggregate request message (OFPMP_AGGREGATE), or when an OpenFlow statistics multi-part flow message request (OFPM_FLOW) is translated to multiple flow table entries (a bulk request). When an OpenFlow multi-part flow statistics request message (OFPM_FLOW) is translated to a single flow table entries request (a single entry request), the counters are read from hardware in real time.

A mix of the two methods can be used to retrieve some flow table statistics from hardware in real time while retrieving other statistics from the cache. See Filter Policy Statistics for more information about ACL cache and ACL statistics.

When the auxiliary channel is enabled, the switch will set up a dedicated auxiliary channel for statistics. See OpenFlow Switch Auxiliary Channels for more information.

7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System, Virtualized Service Router Release 15.0.R4 Router Configuration Guide, NOKIA DOCUMENTATION at 751 (July 2017).

119. One or more of the Nokia ‘932 Products transmit data packets using the selected network tunnel based on the tunnel specific information.

120. The Nokia ‘932 Products are available to businesses and individuals throughout the United States.

121. The Nokia ‘932 Products are provided to businesses and individuals located in the Western District of Texas.

122. By making, using, testing, offering for sale, and/or selling products utilizing flow state information to perform a method of network tunneling, including but not limited to the Nokia ‘932 Products, Nokia has injured Plaintiffs and is liable to Plaintiffs for directly infringing one or more claims of the ‘932 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

123. Nokia also indirectly infringes the ‘932 patent by actively inducing infringement under 35 U.S.C. § 271(b).

124. Nokia has had knowledge of the '932 patent since at least service of this Complaint or shortly thereafter, and Nokia knew of the '932 patent and knew of its infringement, including by way of this lawsuit.

125. Alternatively, Nokia has had knowledge of the '932 patent since at least April 1, 2008, when U.S. Patent 7,352,747, which is owned by Defendant Nokia of America Corporation and cites the '932 patent as relevant prior art, was issued. Alternatively, Nokia has had knowledge of the '932 patent since at least February 12, 2004, when U.S. Patent Appl. No. 10/214,756, which on information and belief is owned by Defendant Nokia of America Corporation and cites the '932 patent as relevant prior art, was published. Alternatively, Nokia has had knowledge of the '932 patent since at least July 14, 2005, when U.S. Patent Appl. No. 10/505,227, which on information and belief is owned by Defendant Nokia of America Corporation and cites the '932 patent as relevant prior art, was published.

126. Nokia intended to induce patent infringement by third-party customers and users of the Nokia '932 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Nokia specifically intended and was aware that the normal and customary use of the accused products would infringe the '932 patent. Nokia performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '932 patent and with the knowledge that the induced acts would constitute infringement. For example, Nokia provides the Nokia '932 Products that have the capability of operating in a manner that infringe one or more of the claims of the '932 patent, including at least claim 1, and Nokia further provides documentation and training materials that cause customers and end users of the Nokia '932 Products to utilize the

products in a manner that directly infringe one or more claims of the '932 patent.[20] By providing instruction and training to customers and end-users on how to use the Nokia '932 Products in a manner that directly infringes one or more claims of the '932 patent, including at least claim 1, Nokia specifically intended to induce infringement of the '932 patent. Nokia engaged in such inducement to promote the sales of the Nokia '932 Products, e.g., through Nokia user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '932 patent. Accordingly, Nokia has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '932 patent, knowing that such use constitutes infringement of the '932 patent.

127. The '932 patent is well-known within the industry as demonstrated by multiple citations to the '932 patent in published patents and patent applications assigned to technology

[20] *See, e.g.*, *Alcatel-Lucent 5620 Service Aware Manager - Release 13.0 R1 User Guide*, NOKIA DOCUMENTATION (March 2015); *Alcatel-Lucent 5620 Service Aware Manager System Release 13.0 R1 Administrator Guide*, NOKIA DOCUMENTATION (March 2015); *Alcatel-Lucent 5620 Service Aware Manager System Release 13.0 R1 Statistics Management Guide*, NOKIA DOCUMENTATION (March 2015); *5620 SAM Service Aware Manager User Guide Release 14.0 R13*, NOKIA DOCUMENTATION (July 2020); *Nokia Network Services Platform Release 19*, NOKIA DATA SHEET (2019*); Software Defined Networks (SDN) for the 5G Era*, NOKIA YOUTUBE.COM CHANNEL (September 30, 2019) *available at*: https://www.youtube.com/watch?v=CXKFC_Vq9SE; *NSP Network Services Platform Network Functions Manager - Packet (NFM-P) Release 20.6 User Guide*, NOKIA DOCUMENTATION (June 2020); *NSP Network Services Platform Network Functions Manager - Packet (NFM-P) Release 17.3 User Guide*, NOKIA DOCUMENTATION (March 2017); *7450 ESS OS*, INTERFACE CONFIGURATION GUIDE (September 2012); *7450 ESS OS*, SERVICES GUIDE (March 2011); *Alcatel-Lucent 7450 Ethernet Services Switch Release 13.0.R1 and Alcatel-Lucent 7750 Service Router Release 13.0.R1*, MULTISERVICE INTEGRATED SERVICE ADAPTER GUIDE (2015); *Nokia 7750 Service Router Release 15.1*, NOKIA DATASHEET (April 2018); *7750 SR OS Router Configuration Guide*, ALCATEL LUCENT DOCUMENTATION (February 2010); *Nokia 7950 Extensible Routing System Release 15*, NOKIA DATASHEET (2017); *Alcatel-Lucent 7950 Extensible Routing System Release 13.0.R4*, INTERFACE CONFIGURATION GUIDE (2015); *7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System, Virtualized Service Router – Router Configuration Guide Release 20.7.R1*, NOKIA DOCUMENTATION (July 2020); *7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System, Virtualized Service Router – Interface Configuration Guide 20.7.R1*, NOKIA DOCUMENTATION (July 2020); *7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System, Virtualized Service Router – MPLS Guide Release 20.7.R1*, NOKIA DOCUMENTATION (July 2020); and *Segment Routing and Path Computation Element*, NOKIA TECHNOLOGY WHITE PAPER (2016).

companies and academic institutions. Nokia is utilizing the technology claimed in the '932 patent without paying a reasonable royalty. Nokia is infringing the '932 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

128. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '932 patent.

129. As a result of Nokia's infringement of the '932 patent, Plaintiffs have suffered monetary damages, and seek recovery in an amount adequate to compensate for Nokia's infringement, but in no event less than a reasonable royalty for the use made of the invention by Nokia together with interest and costs as fixed by the Court.

COUNT III
INFRINGEMENT OF U.S. PATENT NO. 7,012,919

130. Plaintiffs reference and incorporate by reference the preceding paragraphs of this Complaint as if fully set forth herein.

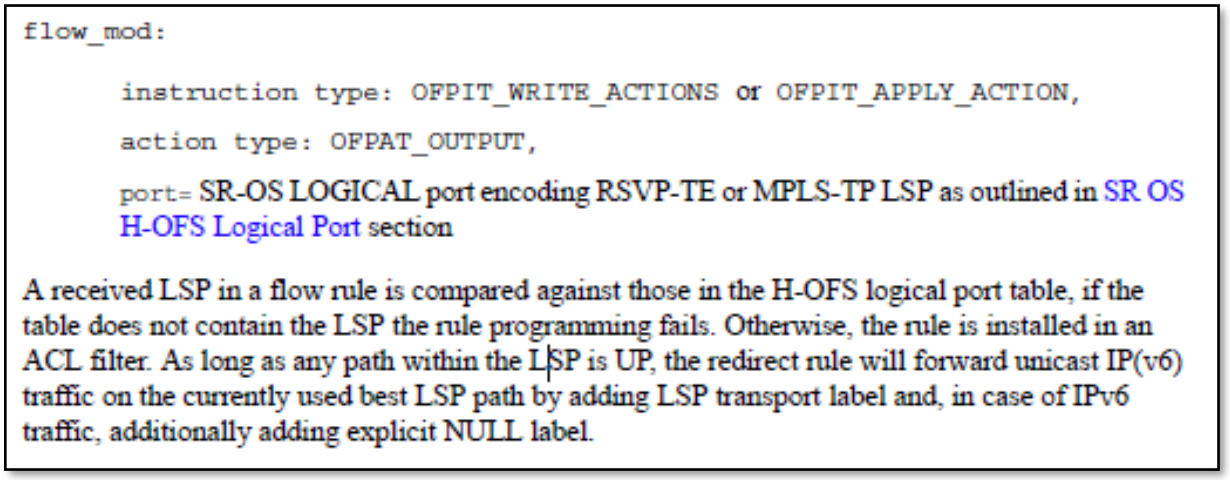
131. Nokia designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for providing an aggregate micro-flow.

132. Nokia designs, makes, sells, offers to sell, imports, and/or uses the following products: the Nokia 7450 Ethernet Service Switch Release 12.0.R5 and later (including the following models: ESS-12, ESS-7); 7750 Service Router Release 12.0.R5 and later (including the following models: 7750 SR-1s, 7750 SR-2s, 7750 SR-7s, 7750 SR-14s, 7750 SR-a4, 7750 SR-a8, 7750 SR-1, 7750 SR-7, 7750 SR-12, 7750 SR-12e, 7750 SR-1e, 7750 SR-2e, and 7750 SR-3e); and 7950 Extensible Routing System Release 12.0.R5 and later (including the following models: 7950 XRS-20e and 7950 XRS-20) (collectively, the "Nokia '919 Product(s)").

133. One or more Nokia subsidiaries and/or affiliates use the Nokia '919 Products in regular business operations.

134. One or more of the Nokia '919 Products include technology for providing an aggregate micro-flow.

135. The Nokia '919 Products support traffic steering to a label switching path (LSP). This functionality is enabled in the Hybrid OpenFlow switch configuration of the Nokia '919 Products.



flow_mod:

instruction type: OFPIT_WRITE_ACTIONS or OFPIT_APPLY_ACTION,

action type: OFPAT_OUTPUT,

port= SR-OS LOGICAL port encoding RSVP-TE or MPLS-TP LSP as outlined in SR OS H-OFS Logical Port section

A received LSP in a flow rule is compared against those in the H-OFS logical port table, if the table does not contain the LSP the rule programming fails. Otherwise, the rule is installed in an ACL filter. As long as any path within the LSP is UP, the redirect rule will forward unicast IP(v6) traffic on the currently used best LSP path by adding LSP transport label and, in case of IPv6 traffic, additionally adding explicit NULL label.

Alcatel-Lucent 7750 Service Router Release 13.0.R4 Router Configuration Guide, NOKIA DOCUMENTATION at 681 (2015)

136. One or more of the Nokia '919 Products define a set of label switched paths ("LSP").

> MPLS directs a flow of IP packets along a label switched path (LSP). LSPs are simplex, meaning that the traffic flows in one direction (unidirectional) from an ingress router to an egress router. Two LSPs are required for duplex traffic. Each LSP carries traffic in a specific direction, forwarding packets from one router to the next across the MPLS domain.
>
> When an ingress router receives a packet, it adds an MPLS header to the packet and forwards it to the next hop in the LSP. The labeled packet is forwarded along the LSP path until it reaches the destination point. The MPLS header is removed and the packet is forwarded based on Layer 3 information such as the IP destination address. The physical path of the LSP is not constrained to the shortest path that the IGP would choose to reach the destination IP address.

7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System MPLS Guide Release 15.0.R1. NOKIA DOCUMENTATION at 115 (May 2017) (emphasis added).

137. One or more of the Nokia '919 Products define a micro-flow comprising a set of data packets, the micro-flow having a quality of service type.

138. One or more of the Nokia '919 Products select a particular label switched path from the defined set of label switched paths based on the quality of service type of the micro-flow.

139. The Nokia '919 Products enable ingress path management wherein packets are forwarded based on the ingress quality of service value that are associated with a packet flow.

> By default, the XCM (on the 7950 XRS) and the IOM/IMM (on the 7750 SR and 7450 ESS) ingress data paths provides two multicast paths through the fabric referred to as high-priority path and low-priority path respectively. When a multicast packet is received on an ingress network or access interface or on a VPLS SAP, the packet's classification will determine its forwarding class and priority or profile as per the ingress QoS policy. This then determines which of the SAP or interface multicast queues it must be stored in. By default SAP and interface expedited forwarding class queues forward over the high-priority multicast path and the non expedited forwarding class queues forward over the low-priority multicast path.

7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System MPLS Guide Release 15.0.R1. NOKIA DOCUMENTATION at 175 (May 2017) (emphasis added).

140. One or more of the Nokia '919 Products transmits the micro-flow along the selected label switched path, the micro-flow having an associated forwarding equivalence class, the forwarding equivalence class defining additional transmission constraints for the micro-flow.

141. The Nokia '919 Products perform the operation of defining a micro-flow comprising a set of data packets, the micro-flow having a quality of service type.

142. The Nokia '919 Products are available to businesses and individuals throughout the United States.

143. The Nokia '919 Products are provided to businesses and individuals located in the Western District of Texas.

144. Nokia has directly infringed and continues to directly infringe the '919 patent by, among other things, making, using, offering for sale, and/or selling technology for providing an aggregate micro-flow, including but not limited to the Nokia '919 Products.

145. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Nokia '919 Products, Nokia has injured Plaintiffs and is liable for directly infringing one or more claims of the '919 patent, including at least claim 1, pursuant to 35 U.S.C. § 271(a).

146. Nokia also indirectly infringes the '919 patent by actively inducing infringement under 35 U.S.C. § 271(b).

147. Nokia has had knowledge of the '919 patent since at least service of this Complaint or shortly thereafter, and Nokia knew of the '919 patent and knew of its infringement, including by way of this lawsuit.

148. Nokia intended to induce patent infringement by third-party customers and users of the Nokia '919 Products and had knowledge that the inducing acts would cause infringement or

was willfully blind to the possibility that its inducing acts would cause infringement. Nokia specifically intended and was aware that the normal and customary use of the accused products would infringe the '919 patent. Nokia performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '919 patent and with the knowledge that the induced acts would constitute infringement. For example, Nokia provides the Nokia '919 Products that have the capability of operating in a manner that infringe one or more of the claims of the '919 patent, including at least claim 1, and Nokia further provides documentation and training materials that cause customers and end users of the Nokia '919 Products to utilize the products in a manner that directly infringe one or more claims of the '919 patent.[21] By providing instruction and training to customers and end-users on how to use the Nokia '919 Products in a manner that directly infringes one or more claims of the '919 patent, including at least claim 1, Nokia specifically intended to induce infringement of the '919 patent. Nokia engaged in such inducement to promote the sales of the Nokia '919 Products, e.g., through Nokia user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '919 patent. Accordingly, Nokia has induced and continues to

[21] *See, e.g., 7750 Service Router, 7450 Ethernet Service Switch. 7950 Extensible Routing System - Advanced Configuration Guide Release 12.0.R5*, NOKIA DOCUMENTATION (2016); *7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System - Advanced Configuration Guide - Part II Release 13.0.R7*, NOKIA DOCUMENTATION (2016); *7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System - Advanced Configuration Guide - Part III Release 20.2.R2*, NOKIA DOCUMENTATION (May 2020); *Nokia SR-OS: Session 4 - Configuring LDP (Incl. Introduction to MPLS)*, NOKIA YOUTUBE.COM CHANNEL (April 22, 2019), *available at*: https://www.youtube.com/watch?v=NXx6XvSYA3Q; and *7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System, Virtualized Service Router – MPLS Guide Release 20.7.R1*, NOKIA DOCUMENTATION (July 2020); *7450 ESS OS*, INTERFACE CONFIGURATION GUIDE (September 2012); *7450 ESS OS*, SERVICES GUIDE (March 2011); *Alcatel-Lucent 7450 Ethernet Services Switch Release 13.0.R1 and Alcatel-Lucent 7750 Service Router Release 13.0.R1*, MULTISERVICE INTEGRATED SERVICE ADAPTER GUIDE (2015); *Nokia 7750 Service Router Release 15.1*, NOKIA DATASHEET (April 2018); *7750 SR OS Router Configuration Guide*, ALCATEL LUCENT DOCUMENTATION (February 2010); *Nokia 7950 Extensible Routing System Release 15*, NOKIA DATASHEET (2017); and *Alcatel-Lucent 7950 Extensible Routing System Release 13.0.R4*, INTERFACE CONFIGURATION GUIDE (2015).

induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '919 patent, knowing that such use constitutes infringement of the '919 patent.

149. The '919 patent is well-known within the industry as demonstrated by multiple citations to the '919 patent in published patents and patent applications assigned to technology companies and academic institutions. Nokia is utilizing the technology claimed in the '919 patent without paying a reasonable royalty. Nokia is infringing the '919 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

150. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '919 patent.

151. As a result of Nokia's infringement of the '919 patent, Plaintiffs have suffered monetary damages, and seek recovery in an amount adequate to compensate for Nokia's infringement, but in no event less than a reasonable royalty for the use made of the invention by Nokia together with interest and costs as fixed by the Court.

COUNT IV
INFRINGEMENT OF U.S. PATENT NO. 8,243,593

152. Plaintiffs reference and incorporate by reference the preceding paragraphs of this Complaint as if fully set forth herein.

153. Nokia designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for processing a flow of a series of information packets.

154. Nokia designs, makes, sells, offers to sell, imports, and/or uses the following Nokia devices containing Nokia Application Assurance functionality: the Nokia 7450 Ethernet Service Switch Release 13.0.R1 and later and the Nokia 7750 Service Router Release 13.0.R1 and later (collectively, the "Nokia '593 Product(s)").

155. One or more Nokia subsidiaries and/or affiliates use the Nokia '593 Products in regular business operations.

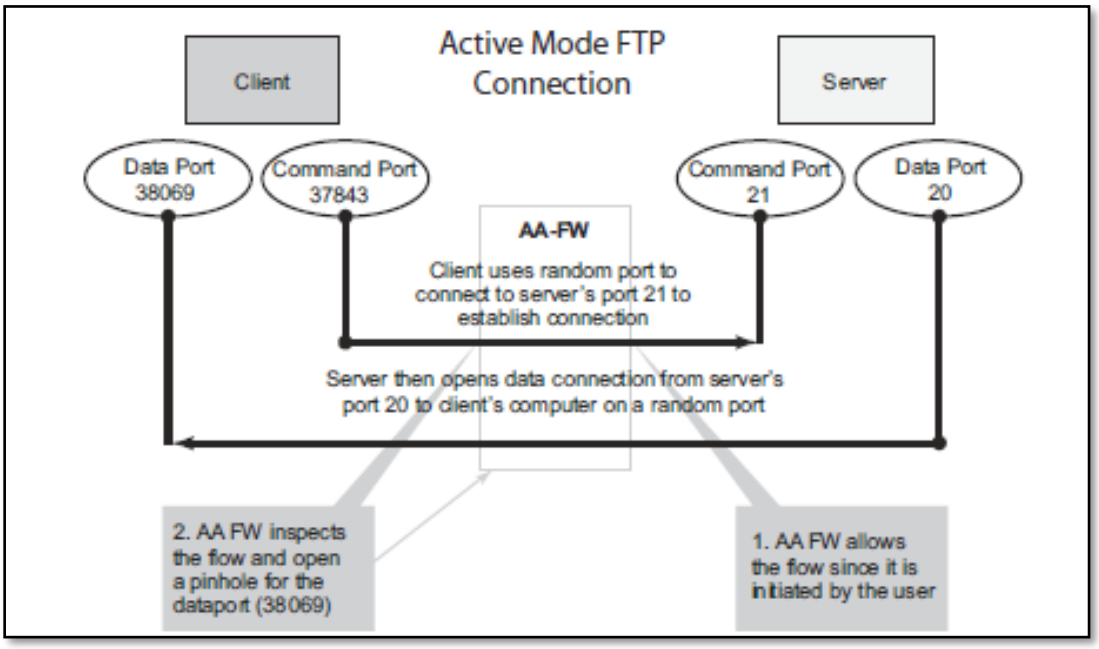
156. One or more of the Nokia '593 Products include technology for processing a flow of a series of information packets. Specifically, the Nokia '593 Products maintain a set of behavioral statistics based on each and every information packet belonging to a flow.

157. The Nokia '593 Products are available to businesses and individuals throughout the United States.

158. The Nokia '593 Products are provided to businesses and individuals located in the Western District of Texas.

159. Nokia has directly infringed and continues to directly infringe the '593 patent by, among other things, making, using, offering for sale, and/or selling products and services for processing a flow of a series of information packets.

160. The Nokia '593 Products support stateful flow processing wherein the Nokia '593 Products use Layer 3 and Layer 4 information to build a state of a flow of data packets.



7450 Ethernet Service Switch, 7750 Service Router, Extensible Routing System Advanced Configuration Guide - Part III Releases Up To 20.2.R2, NOKIA DOCUMENTATION AT 230 (May 2020).

161. The Nokia '593 Products maintain a set of behavioral statistics for the flow, wherein the set of behavioral statistics is updated based on each information packet belonging to the flow, as each information packet is processed.

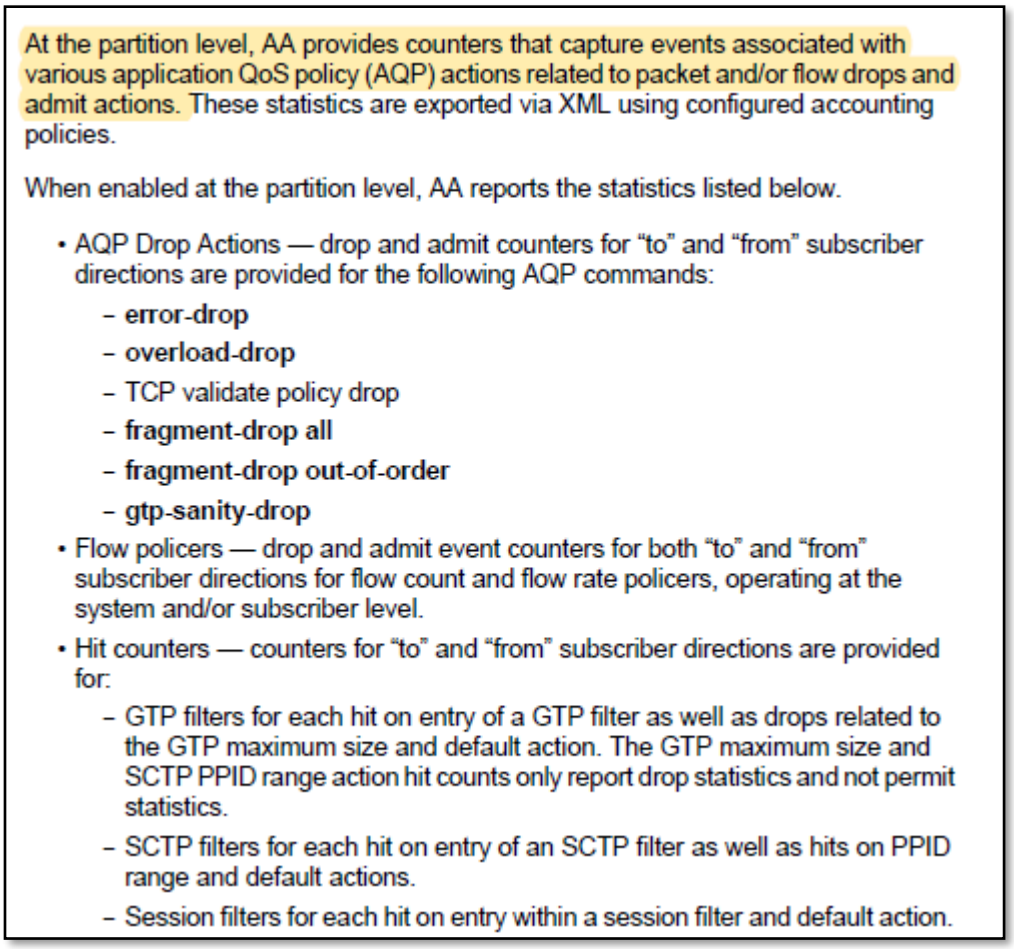
162. The Nokia '593 Products enable the generation of behavioral statistics based on each packet that is processed.

> Furthermore, AA ISA provides configurable flow policers. These policers, once configured, prevent a wide range of flooding attacks (such as ICMP PING flooding, UDP flooding, SYN Flood Attack...etc.). These policers provide protection at multiple levels; per system per application/application groups and per subscriber per applications/applications groups.
>
> There are two types of AA ISA flow policers; flow setup rate policers and flow count policers. Flow setup rate policers limit the number of new flows, while flow count policers limit the total number of active flows.
>
> In order to protect hosts and network resources, AA FW validates/checks different fields in the packet's header (checksum, TCP Flag, etc.) and if any fails it declares the packet to be invalid. This complements the 7x50 subscriber management enhanced security features, such as IP (or MAC) anti-spoofing protection (such as protecting against LAND attacks) and network protocol DoS protections. The cut-through-drop AQP action must be configured in order to drop these types of invalid packets.

7450 Ethernet Service Switch, 7750 Service Router, Extensible Routing System Advanced Configuration Guide - Part III Releases Up To 20.2.R2, NOKIA DOCUMENTATION AT 231 (May 2020).

163. The Nokia '593 Products determine, based at least partially upon the set of behavioral statistics, whether the flow is exhibiting undesirable behavior.

164. The Nokia '593 Products monitor packets that are part of a flow and capture behavioral statistics associated with the flow. These statistics are used by the policers in the Nokia '593 Products to determine if the flow is exhibiting undesirable behavior. The following excerpt from Nokia documentation shows that the Nokia '593 Products contain counters for flow statistics.



At the partition level, AA provides counters that capture events associated with various application QoS policy (AQP) actions related to packet and/or flow drops and admit actions. These statistics are exported via XML using configured accounting policies.

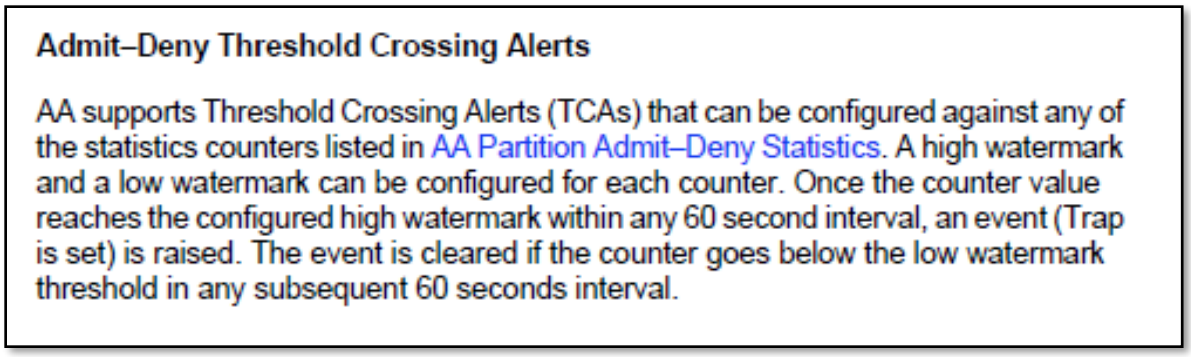
When enabled at the partition level, AA reports the statistics listed below.

- AQP Drop Actions — drop and admit counters for "to" and "from" subscriber directions are provided for the following AQP commands:
  - **error-drop**
  - **overload-drop**
  - TCP validate policy drop
  - **fragment-drop all**
  - **fragment-drop out-of-order**
  - **gtp-sanity-drop**
- Flow policers — drop and admit event counters for both "to" and "from" subscriber directions for flow count and flow rate policers, operating at the system and/or subscriber level.
- Hit counters — counters for "to" and "from" subscriber directions are provided for:
  - GTP filters for each hit on entry of a GTP filter as well as drops related to the GTP maximum size and default action. The GTP maximum size and SCTP PPID range action hit counts only report drop statistics and not permit statistics.
  - SCTP filters for each hit on entry of an SCTP filter as well as hits on PPID range and default actions.
  - Session filters for each hit on entry within a session filter and default action.

7450 Ethernet Service Switch, 7750 Service Router, Virtualized Service Router Multiservice ISA and ESA Guide Release 20.5.R1, NOKIA DOCUMENTATION at 142 (May 2020) (emphasis added).

165. The Nokia '593 Products determine whether the flow is exhibiting undesirable behavior regardless of the presence or absence of congestion.

166. The Nokia '592 Produces contain functionality for determining if the flow has undesirable behavior. This functionality includes the Threshold Cross Alerts feature which is discussed in the following excerpt from Nokia's documentation.



Admit–Deny Threshold Crossing Alerts

AA supports Threshold Crossing Alerts (TCAs) that can be configured against any of the statistics counters listed in AA Partition Admit–Deny Statistics. A high watermark and a low watermark can be configured for each counter. Once the counter value reaches the configured high watermark within any 60 second interval, an event (Trap is set) is raised. The event is cleared if the counter goes below the low watermark threshold in any subsequent 60 seconds interval.

7450 Ethernet Service Switch, 7750 Service Router, Virtualized Service Router Multiservice ISA and ESA Guide Release 20.5.R1, NOKIA DOCUMENTATION at 142 (May 2020).

167. The Nokia '593 Products enforce a penalty on the flow in response to a determination that the flow is exhibiting undesirable behavior.

168. By making, using, testing, offering for sale, and/or selling products and services for processing a flow of a series of information packets, including but not limited to the Nokia '593 Products, Nokia has injured Plaintiffs and is liable for directly infringing one or more claims of the '593 patent, including at least claim 4, pursuant to 35 U.S.C. § 271(a).

169. Nokia also indirectly infringes the '593 patent by actively inducing infringement under 35 U.S.C. § 271(b).

170. Nokia has had knowledge of the '593 patent since at least service of this Complaint or shortly thereafter, and Nokia knew of the '593 patent and knew of its infringement, including by way of this lawsuit.

171. Nokia intended to induce patent infringement by third-party customers and users of the Nokia '593 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Nokia specifically intended and was aware that the normal and customary use of the accused products would infringe the '593 patent. Nokia performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '593 patent and with the knowledge

that the induced acts would constitute infringement. For example, Nokia provides the Nokia '593 Products that have the capability of operating in a manner that infringe one or more of the claims of the '593 patent, including at least claim 4, and Nokia further provides documentation and training materials that cause customers and end users of the Nokia '593 Products to utilize the products in a manner that directly infringe one or more claims of the '593 patent.[22] By providing instruction and training to customers and end-users on how to use the Nokia '593 Products in a manner that directly infringes one or more claims of the '593 patent, including at least claim 4, Nokia specifically intended to induce infringement of the '593 patent. Nokia engaged in such inducement to promote the sales of the Nokia '593 Products, e.g., through Nokia user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '593 patent. Accordingly, Nokia has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '593 patent, knowing that such use constitutes infringement of the '593 patent.

172. The '593 patent is well-known within the industry as demonstrated by multiple citations to the '593 patent in published patents and patent applications assigned to technology companies and academic institutions. Nokia is utilizing the technology claimed in the '593 patent

[22] *See, e.g.*, *Application Assurance – Application Identification and User-Defined Applications*, 7750 SR ADVANCED CONFIGURATION GUIDE (2016); *Application Assurance*, 7750 ESS AND 7750 SR MULTISERVICE INTEGRATED SERVICE ADAPTER GUIDE (2015); *Application Assurance – HTTP In Browser Notification*, 7750 SR ADVANCED CONFIGURATION GUIDE (2016); *7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System - Advanced Configuration Guide - Part II Release 13.0.R7*, NOKIA DOCUMENTATION (2016); *Insight-Driven DDoS Network Security*, NOKIA YOUTUBE.COM CHANNEL (August 13, 2019); *available at*: https://www.youtube.com/watch?v=9agu-80-OGY; *7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System – Advanced Configuration Guide – Part III Release 20.2.R2*, NOKIA DOCUMENTATION (May 2020); *Nokia 7750 Service Router Release 20 Data Sheet*, NOKIA DOCUMENTATION (2020); *7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System – Advanced Configuration Guide – Part III Release 14.0.R7*, NOKIA DOCUMENTATION (April 2017); and *7450 Ethernet Service Switch, 7750 Service Router, Virtualized Service Router - Multiservice ISA and ESA Guide Release 20.5.R1*, NOKIA DOCUMENTATION (May 2020).

without paying a reasonable royalty. Nokia is infringing the '593 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

173. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '593 patent.

174. As a result of Nokia's infringement of the '593 patent, Plaintiffs have suffered monetary damages, and seek recovery in an amount adequate to compensate for Nokia's infringement, but in no event less than a reasonable royalty for the use made of the invention by Nokia together with interest and costs as fixed by the Court.

COUNT V
INFRINGEMENT OF U.S. PATENT NO. 8,817,790

175. Plaintiffs reference and incorporate by reference the preceding paragraphs of this Complaint as if fully set forth herein.

176. Nokia designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for handling a flow of information packets.

177. Nokia designs, makes, sells, offers to sell, imports, and/or uses the following Nokia devices containing Nokia Application Assurance functionality: the Nokia 7450 Ethernet Service Switch Release 13.0.R1 and later and the Nokia 7750 Service Router Release 13.0.R1 and later (collectively, the "Nokia '790 Product(s)").

178. One or more Nokia subsidiaries and/or affiliates use the Nokia '790 Products in regular business operations.

179. One or more of the Nokia '790 Products include technology for handling a flow of information packets. Specifically, the Nokia '790 Products process information packets that have the same header information.

180. The Nokia '790 Products are available to businesses and individuals throughout the United States.

181. The Nokia '790 Products are provided to businesses and individuals located in the Western District of Texas.

182. Nokia has directly infringed and continues to directly infringe the '790 patent by, among other things, making, using, offering for sale, and/or selling technology for handling a flow of information packets, including but not limited to the Nokia '790 Products.

183. The Nokia '790 Products process a flow comprised of two or more information packets having header information in common. Further, the Nokia '790 Products use header-independent statistics for traffic classification. These statistics include bit rate, packet counts, and byte counts that are used to identify a particular traffic type.

> Application Assurance attempts to positively identify the protocols and applications for flows based on a pattern signature observation of the setup and initial packets in a flow. The system correlates control and data flows belonging to the same application. In parallel, statistical and behavioral techniques are also used to identify the application. Until identified, the flow will not have a known application and will be treated according to the default policies (AQP policies defined using all or any ASO characteristics, subscriber Id and traffic direction as match criteria) for traffic for that AA subscriber, app-profile and direction (packets will be forwarded unless an action is configured otherwise). If the identification beyond OSI Layer 2is not successful, the flow will be flagged as an unknown protocol type, (for example unknown_tcp or unknown_udp). The unknown traffic is handled as part of all application statistics and policy, including generation of stats on the volume of unknown traffic.

7450 Ethernet Service Switch, 7750 Service Router, Virtualized Service Router Multiservice Integrated Service Adapter Guide Release 16.0.R1, NOKIA DOCUMENTATION AT 79 (May 2018) (emphasis added).

184. The Nokia '790 Products store header-independent statistics about the flow in a flow block associated with the flow.

185. The Nokia ‘790 Products perform traffic matching using header-independent statistics such as: total number of input packets, total number of output packets, input bit rates, and output bit rates.

186. The Nokia ’790 Products contain functionality for identifying traffic using header independent statistics such as heuristic techniques that look at the behavior of the flow of packets to determine the application type.

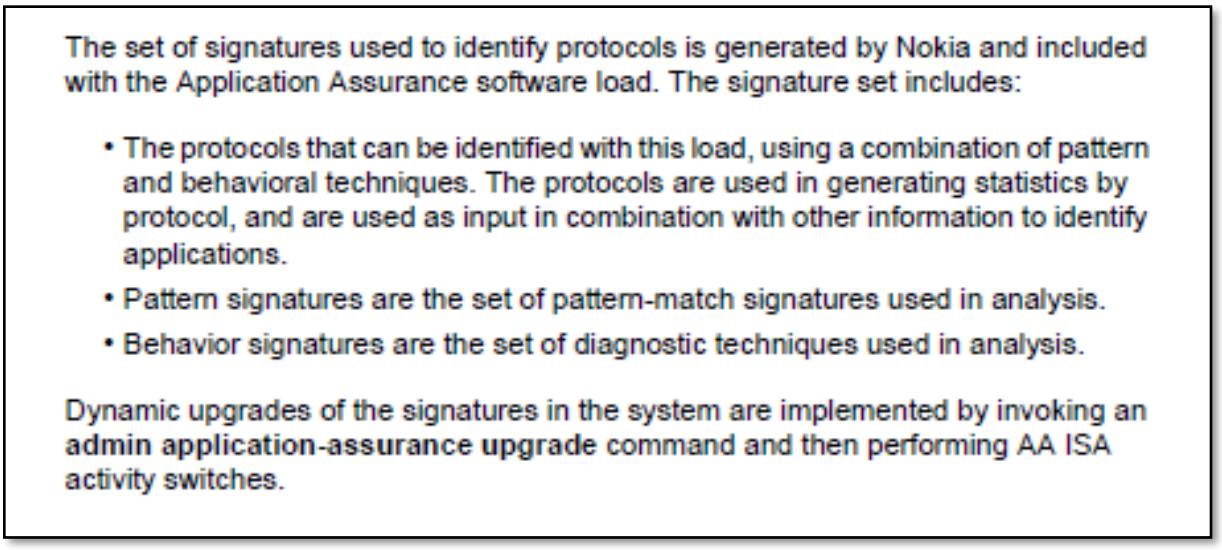
> Application identification means there is sufficient flow information to provide the network operator with a view to the underlying nature and value of the content. Application ID does not include:
>
> - Anti-virus signatures per IPS/UTM.
> - Content inspection (e-mail, text, picture, or video images). The payload data content of flows is typically not examined as part of the application identification.
>
> Application Assurance can identify and measure non-encrypted IP traffic flows using any available information from Layer 2 to Layer 7, and encrypted IP traffic flows using heuristic techniques.

Ethernet Service Switch, 7750 Service Router, Virtualized Service Router Multiservice Integrated Service Adapter Guide Release 16.0.R1, NOKIA DOCUMENTATION AT 79 (May 2018) (emphasis added).

187. The Nokia ‘790 Products update the header-independent statistics in the flow block as each information packet belonging to the flow is processed. The header-independent statistics are stored in a flow block associated with the flow.

188. The Nokia ‘790 Products categorize the flow as one or more traffic types by determining whether the header-independent statistics match one or more profiles corresponding to a traffic type.

189. The Nokia ‘790 Products use pattern signatures and behavioral data to determine the application associated with a flow of packets. The use of these two techniques is identified in the below excerpt from Nokia documentation.



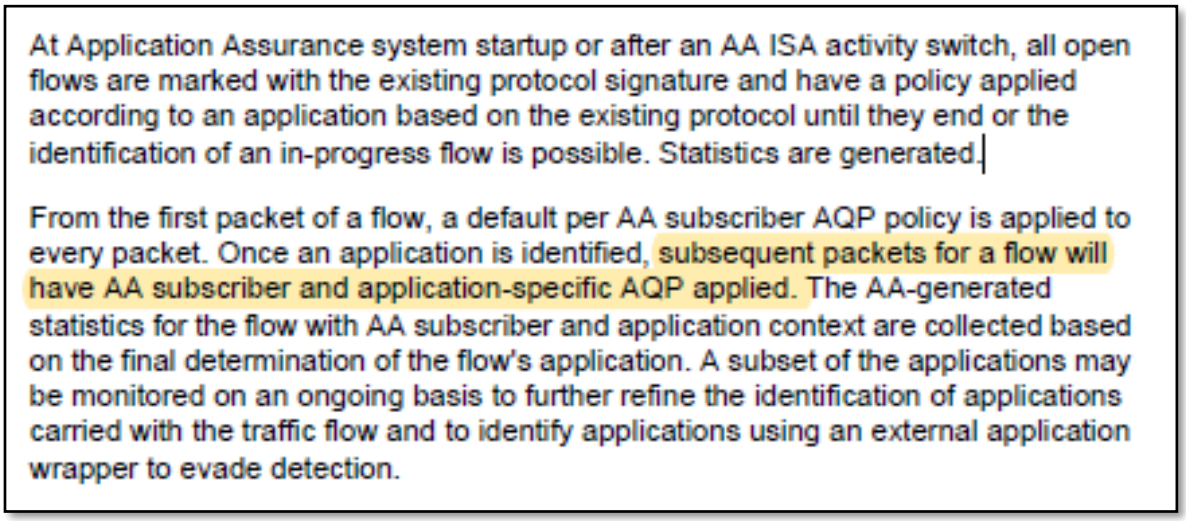
The set of signatures used to identify protocols is generated by Nokia and included with the Application Assurance software load. The signature set includes:

- The protocols that can be identified with this load, using a combination of pattern and behavioral techniques. The protocols are used in generating statistics by protocol, and are used as input in combination with other information to identify applications.
- Pattern signatures are the set of pattern-match signatures used in analysis.
- Behavior signatures are the set of diagnostic techniques used in analysis.

Dynamic upgrades of the signatures in the system are implemented by invoking an **admin application-assurance upgrade** command and then performing AA ISA activity switches.

7450 Ethernet Service Switch, 7750 Service Router, Virtualized Service Router Multiservice Integrated Service Adapter Guide Release 16.0.R1, NOKIA DOCUMENTATION AT 82 (May 2018).

190. The Nokia '790 Products perform an operation that is determined according to the one or more traffic types on one or more information packets belonging to the flow if the one or more traffic types match one or more particular traffic types designated by a user.



At Application Assurance system startup or after an AA ISA activity switch, all open flows are marked with the existing protocol signature and have a policy applied according to an application based on the existing protocol until they end or the identification of an in-progress flow is possible. Statistics are generated.

From the first packet of a flow, a default per AA subscriber AQP policy is applied to every packet. Once an application is identified, subsequent packets for a flow will have AA subscriber and application-specific AQP applied. The AA-generated statistics for the flow with AA subscriber and application context are collected based on the final determination of the flow's application. A subset of the applications may be monitored on an ongoing basis to further refine the identification of applications carried with the traffic flow and to identify applications using an external application wrapper to evade detection.

7450 Ethernet Service Switch, 7750 Service Router, Virtualized Service Router Multiservice Integrated Service Adapter Guide Release 16.0.R1, NOKIA DOCUMENTATION AT 79 (May 2018) (emphasis added).

191. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Nokia '790 Products, Nokia has injured Plaintiffs and is liable for

directly infringing one or more claims of the '790 patent, including at least claim 1, pursuant to 35 U.S.C. § 271(a).

192. Nokia also indirectly infringes the '790 patent by actively inducing infringement under 35 U.S.C. § 271(b).

193. Nokia has had knowledge of the '790 patent since at least service of this Complaint or shortly thereafter, and Nokia knew of the '790 patent and knew of its infringement, including by way of this lawsuit.

194. Alternatively, Nokia has had knowledge of the '790 patent since at least October 3, 2010, when U.S. Patent 9,780,997, which on information and belief is owned by Defendant Nokia of America Corporation and cites the '790 patent as relevant prior art, was issued. Alternatively, Nokia has had knowledge of the '790 patent since at least August 4, 2016, when PCT Appl. No. 16/000292, which on information and belief is owned by Defendant Nokia of America Corporation and cites the '790 patent as relevant prior art, was published by the World Intellectual Property Organization.

195. Nokia intended to induce patent infringement by third-party customers and users of the Nokia '790 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Nokia specifically intended and was aware that the normal and customary use of the accused products would infringe the '790 patent. Nokia performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '790 patent and with the knowledge that the induced acts would constitute infringement. For example, Nokia provides the Nokia '790 Products that have the capability of operating in a manner that infringe one or more of the claims of the '790 patent, including at least claim 1, and Nokia further provides documentation and

training materials that cause customers and end users of the Nokia '790 Products to utilize the products in a manner that directly infringe one or more claims of the '790 patent.23 By providing instruction and training to customers and end-users on how to use the Nokia '790 Products in a manner that directly infringes one or more claims of the '790 patent, including at least claim 1, Nokia specifically intended to induce infringement of the '790 patent. Nokia engaged in such inducement to promote the sales of the Nokia '790 Products, e.g., through Nokia user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '790 patent. Accordingly, Nokia has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '790 patent, knowing that such use constitutes infringement of the '790 patent.

196. The '790 patent is well-known within the industry as demonstrated by multiple citations to the '790 patent in published patents and patent applications assigned to technology companies and academic institutions. Nokia is utilizing the technology claimed in the '790 patent without paying a reasonable royalty. Nokia is infringing the '790 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

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[23] *See, e.g., Application Assurance – Application Identification and User-Defined Applications*, 7750 SR ADVANCED CONFIGURATION GUIDE (2016); *Application Assurance*, 7750 ESS AND 7750 SR MULTISERVICE INTEGRATED SERVICE ADAPTER GUIDE (2015); *Application Assurance – HTTP In Browser Notification*, 7750 SR ADVANCED CONFIGURATION GUIDE (2016); *7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System - Advanced Configuration Guide - Part II Release 13.0.R7*, NOKIA DOCUMENTATION (2016); *Insight-Driven DDoS Network Security*, NOKIA YOUTUBE.COM CHANNEL (August 13, 2019); *available at*: https://www.youtube.com/watch?v=9agu-80-OGY; *7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System – Advanced Configuration Guide – Part III Release 20.2.R2*, NOKIA DOCUMENTATION (May 2020); *Nokia 7750 Service Router Release 20 Data Sheet*, NOKIA DOCUMENTATION (2020); *7450 Ethernet Service Switch, 7750 Service Router, 7950 Extensible Routing System – Advanced Configuration Guide – Part III Release 14.0.R7*, NOKIA DOCUMENTATION (April 2017); and *7450 Ethernet Service Switch, 7750 Service Router, Virtualized Service Router - Multiservice ISA and ESA Guide Release 20.5.R1*, NOKIA DOCUMENTATION (May 2020).

197. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '790 patent.

198. As a result of Nokia's infringement of the '790 patent, Plaintiffs have suffered monetary damages, and seek recovery in an amount adequate to compensate for Nokia's infringement, but in no event less than a reasonable royalty for the use made of the invention by Nokia together with interest and costs as fixed by the Court.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs Sable IP, LLC and Sable Networks, Inc. respectfully request that this Court enter:

A. A judgment in favor of Plaintiffs that Nokia has infringed, either literally and/or under the doctrine of equivalents, the '431, '932, '919, '593, and '790 patents;

B. An award of damages resulting from Nokia's acts of infringement in accordance with 35 U.S.C. § 284;

C. A judgment and order finding that Nokia's infringement was willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate within the meaning of 35 U.S.C. § 284 and awarding to Plaintiffs enhanced damages.

D. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to Plaintiffs their reasonable attorneys' fees against Nokia.

E. Any and all other relief to which Plaintiffs may show themselves to be entitled.

JURY TRIAL DEMANDED

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Plaintiffs Sable IP, LLC and Sable Networks, Inc. request a trial by jury of any issues so triable by right.

Dated: September 1, 2020

Respectfully submitted,

/s/ Daniel P. Hipskind

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